What is claimed is:

1. An NMR imaging process, comprising:

subjecting the imaging object to a uniform polarizing magnetic field;

applying orthogonal magnetic field gradients to the imaging object;

applying RF energy to the imaging object according to a fast-spin echo

technique; and

subsequently applying RF energy to the imaging object according to a

driven equilibrium technique.

10

15

20

5

2. The process of claim 1, further comprising:

detecting a nuclear magnetic resonance signal emitted by the imaging

object; and

processing the nuclear magnetic resonance signal to provide imaging

data.

3. The process of claim 1, wherein the fast-spin echo technique includes

application of a multi-echo NMR imaging sequence.

4. The process of claim 3, wherein the multi-echo NMR imaging sequence

includes a plurality of different echoes, and wherein each of the plurality of

different echoes is encoded differently.

5. The process of claim 3, wherein the multi-echo NMR imaging sequence includes a plurality of different echoes, and wherein at least one of the plurality of different echoes is encoded differently than another one of the plurality of different echoes.

5

6. The process of claim 3, further comprising applying a 90-degree RF pulse at the center of any of the plurality of different echoes.

10

7. The process of claim 6, wherein the applied 90-degree RF pulse has a phase such that magnetization of the imaging object is forced in the direction of the uniform polarizing magnetic field.

8. The process of claim 3, wherein the multi-echo NMR imaging sequence includes a first 90-degree RF pulse followed by a series of 180-degree RF pulses.

15

9. The process of claim 8, wherein the series of 180-degree RF pulses includes n 180-degree pulses, which are followed by n echoes.

20

10. The process of claim 9, further comprising applying a second 90-degree RF pulse at a center of the *nth* echo, such that magnetization of the imaging object is oriented in the direction of the uniform polarizing magnetic field.

5

10

15

11. An NMR imaging process, comprising: subjecting the imaging object to a uniform polarizing magnetic field; applying orthogonal magnetic field gradients to the imaging object; applying a first 90-degree RF excitation pulse;

applying a sequence of 180-degree RF excitation pulses following the first 90-degree RF excitation pulse; and

applying a second 90-degree RF excitation pulse following the sequence of 180-degree RF excitation pulses.

12. The process of claim 11, further comprising:

detecting a nuclear magnetic resonance signal emitted by the imaging object; and

processing the nuclear magnetic resonance signal to provide imaging data.

- 13. The process of claim 11, wherein each said 180-degree RF excitation pulse in the sequence generates a spin echo.
- 14. The process of claim 13, wherein each said spin echo precedes a
 next 180-degree RF excitation pulse in the sequence.

10

15

- 15. The process of claim 13, wherein the second 90-degree RF excitation pulse is applied at a center of the spin echo generated by a last 180-degree RF excitation pulse in the sequence.
- 16. The process of claim 13, wherein each said spin echo is encoded differently.
 - 17. The process of claim 13, wherein at least one said spin echo is encoded differently than another said spin echo.
 - 18. The process of claim 11, wherein the second 90-degree RF excitation pulse has a phase such that magnetization of the imaging object is forced in the direction of the uniform polarizing magnetic field.